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ELEVENTH ANNUAL REPORT OF THE DIRECTOR.

SUBMITTED TO THE TRUSTEES JANUARY 10, 1900.

To the Board of Trustees of the Missouri Botanical Garden:

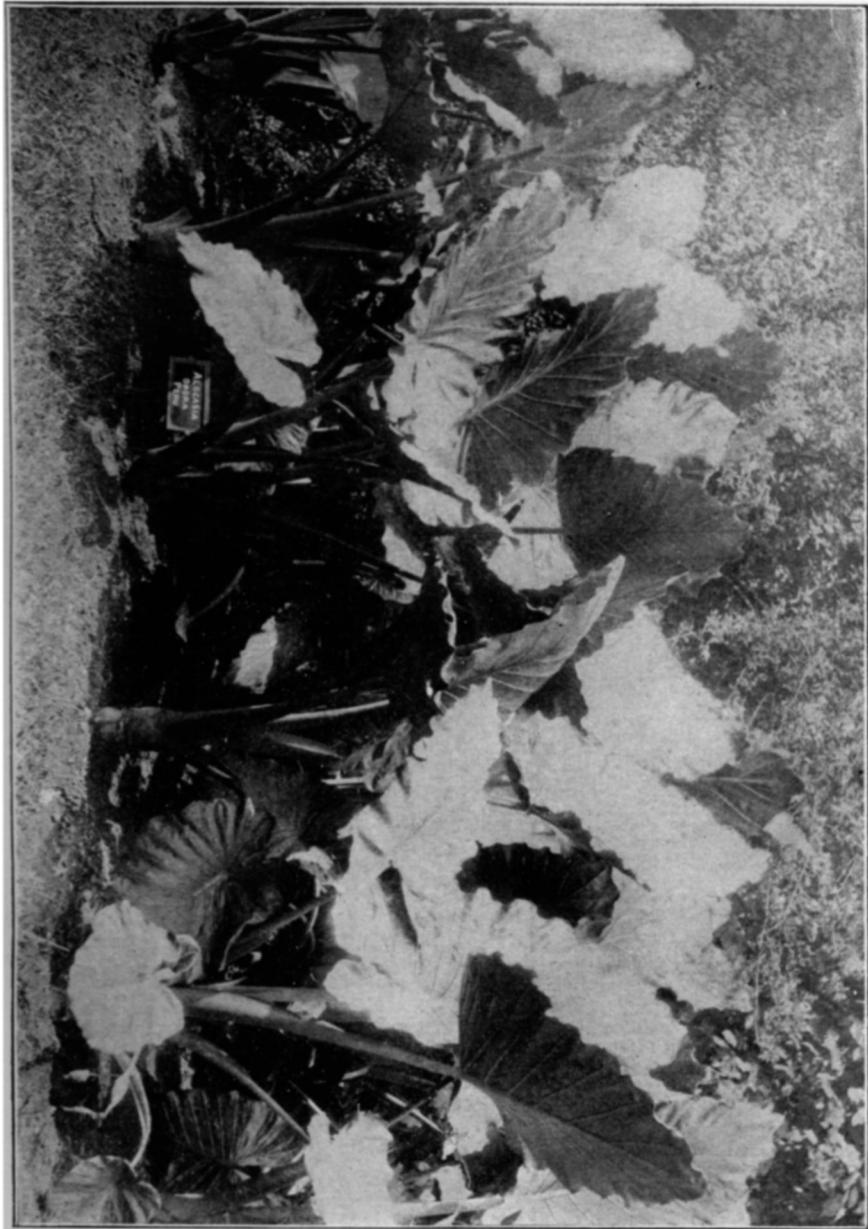
The following report on the Missouri Botanical Garden and the Henry Shaw School of Botany is respectfully submitted in compliance with your rules.

THE BOTANICAL GARDEN.

During the past season, the decorative features of the Garden have been maintained on about the same lines as in previous years. In the spring a very small synoptical collection representative of the principal natural orders of flowering plants was installed in the central part of the Garden, where it is proposed to continue it as a convenient means of enabling teachers in the public schools to demonstrate to their pupils the characters of the larger plant groups. The collection embraces 318 species, pertaining to as many genera, and representing 100 orders. A group of trees and shrubs, comprising 140 species and 13 varieties, was set in the autumn at the east of the Director's residence in conformity with the general plans suggested by the landscape architects of the Board for the future treatment of the grounds now comprised in the Garden, and a small mass of evergreens thought to be capable of enduring the increasing smoke of our atmosphere was set out near the southern apex of the present arboretum.

Considerable additions have been made to the plants cultivated in the several departments of the institution, the

GROUP OF ALOCASIA ODORA.



total number of species and varieties in cultivation now being 9,127, of which 5,875 are annuals or hardy perennials, and 3,252 receive the protection of plant houses during the winter. This shows a net gain of 1,118 as contrasted with the end of 1898.* The plants added during the past year represent 227 entries, of which 45, including 2,793 plants or packets of seeds, were bought, 41, including 17,532 plants or packets of seeds, and valued at \$1,101.78 were collected or propagated by employees of the establishment, and 141, comprising 5,049 plants or packets of seeds and valued at \$635.95, were presented, largely in exchange for similar material or for the publications of the Garden. The expenditure for plants and seeds, as shown by the Secretary's statement, amounts to \$816.37. By way of exchange, 195 packets of seeds and 350 plants, appraised at \$77.65, were sent out; and 1,840 plants were presented to schools and charities in continuation of the policy for some years past.†

The decree of the Circuit Court, City of St. Louis, rendered in 1896 and authorizing the sale of certain unimproved real estate held by the Board as a part of the endowment of the institution, from which an appeal was taken by the Attorney General to the Supreme Court of the State,‡ has been affirmed, as to its essentials, by that Court, in a decree handed down on the thirtieth of June, 1899, so that the Trustees of the Garden are able to look forward to the gradual conversion of a large amount of unproductive, heavily-taxed property, into an income-producing form, while relieved from the past need of withholding from the current revenue a large sum annually, for the protection of this property whenever the improvement of the streets through it should be ordered by the City.

* Report. 10:15. In 1899, 258 species or varieties were lost, and 1,376 added.

† Report. 10:15.

‡ Report. 8:35.

As a first step in the marked advance which may be looked for in the Garden, the Board have authorized the grading of about twenty acres of ground lying between the present Garden and Tower Grove Park, according to the plans prepared some years since by Olmsted, Olmsted and Eliot, the intention being to plant this area as a permanent addition to the grounds in such a way as to add greatly to their attractiveness, while representing in a compact form the leading features of the North American flora.* There is reason to hope that, on the completion of this extension, some eighty acres additional of land lying to the west of the present Garden may be improved, in accordance with plans furnished by the same landscape architects, in such manner as to represent the most modern views of the relationship of as many of the natural orders of plants as can be grown successfully in the climate of St. Louis,† while the present insufficient plant-houses will doubtless be proportionately increased and improved.

In midsummer of 1898 a definite count of visitors entering the Garden by the main gate was instituted, and it was estimated that some 89,102 persons visited the grounds during 1898.‡ This count has been continued through the past season, with the result of showing 54,429 visitors for week days, 7,755 for the open Sunday in June, and 8,837 for the open Sunday in September, or a total of 71,021 for 1899. A comparison of the record for week days of the last five months of the two years, shows a decrease in 1899 of 3,339, although, when the September Sunday is counted in for each year, 33 more persons are found to have visited the Garden in the last five months of 1899 than in the corresponding months of 1898.

The herbarium, as in previous years, has received the most important current collections, particularly those representative of the North American flora. A collection of

* On details of this subject see Report. 8 : 38.

† Report. 8 : 39.

‡ Report. 10 : 16.

some 5,700 specimens (of which some 3,200 are duplicates, to be used in future exchange) largely of Vermont plants, collected by Dr. Ferdinand Blanchard, was received in the early part of the year from Mrs. Alice F. Stevens of Washington, in exchange for an equivalent amount of duplicate material from the Garden herbarium which she directed sent to Dartmouth College. In December about 8,300 specimens were purchased from the estate of the late Dr. A. W. Chapman, of Apalachicola, Fla., of which some 3,200 specimens had constituted his personal reference collection for many years.* Neither of these collections has yet been inserted in the herbarium of the Garden. The material actually incorporated in the herbarium during the year amounts to 32,890 sheets of specimens, of which 15,863 were bought, 4,930 pertain to the Redfield herbarium, † 1,451 were collected by Garden employees, and 10,646, appraised at \$532.30, were presented, chiefly in exchange for Garden publications and specimens. By way of exchange, 5,272 herbarium specimens, valued at \$263.60, were distributed to correspondents.‡

* Concerning these specimens, Dr. Chapman wrote in November, 1898: "When I commenced making a herbarium I cut any stiff paper that came to hand into sheets 15 by 10 inches, inclosing them in binder's boards, book-form, on which I fastened the specimens, on some a single one, or two or more species. The collection thus made has been my working herbarium ever since, and contains some 2,500 to 3,000 species of plants, some of them fastened to buff sheets but all later additions loose. There are about fifty volumes of them, ranging in thickness from one to six inches. When I was writing the first edition of my Flora, these sheets were spread out before me and the plants now remaining on them are to be considered typical,—but since then many have been detached, some to make up the herbarium that I sold to Vanderbilt, and some that I sent to you and to Columbia College. Since then the additions have been placed loosely in the covers. Scattered through the volumes are my notes, descriptions, etchings, and guesses."

† Report. 9:14. 10:17, 18.

‡ It should be noted that this includes 4,098 specimens sent in settlement for the large Blanchard collection, which does not appear in this year's incorporations in the herbarium, being still held for mounting.

The present composition of the herbarium is as follows: —

The Engelmann Herbarium (all groups), about..... 97,800 specimens.

The General Herbarium: —

Higher plants.

The J. J. Bernhardi Herbarium.....	61,121	
The J. H. Redfield Herbarium.....	16,436	
Other specimens.....	<u>142,318</u>	
		219,875 "
Thallophytes.		
The J. J. Bernhardi Herbarium*.....	126	
Other specimens.....	<u>22,549</u>	
		22,675 "
Making a total of about.....	<u>340,350</u>	"
Valued at.....		\$51,052 50†

The following, practically a part of the herbarium, is essentially the same as for some years past:‡ —

Wood specimens of various sizes.....	1,027,	valued at \$100 00
Wood veneers, by Spurr, Hough, Nördlinger, and Michel	2,279,	" " 160 00
Microscope slides, by Hough, Penhallow, Munroe, and others.....	1,051,	" " 250 00
Together.....	<u>4,357,</u>	" " <u>\$510 00</u>

The additions to the library for 1899 include 131 books and 28 pamphlets purchased, and 511 books and 144 pamphlets, valued at \$920.50, presented or sent in exchange for Garden publications.

The manuscript index has been increased by the incorporation of 9,062 new cards, of which 2,762 were bought, and 6,300 written by employees of the Garden.

* So far as yet incorporated.

† The valuation of such collections is purely arbitrary, since they could not be exactly replaced for any amount of money, in case of loss; but they are appraised at \$15.00 per hundred mounted sheets. — Report.

10 : 18.

‡ Report. 8 : 20. 9 : 15. 10 : 18.

As now constituted the library contains: —

Pamphlets	19,175			
Books (general)	18,758			
	<hr/>	32,933	valued at	\$49,030 67
Books (Sturtevant Prelinnean Library)*	463	" "	2,815 00	
MS. volumes (Shaw, Engel- mann and Roetter)	66	" "	800 00	
Total	33,462	" "	\$52,145 67	
Index cards.				
Various	201,447			
Sturtevant Index	52,300			
Total	253,747	" "	2,537 47	
Total valuation				\$54,683 14

A general catalogue of the library, to which reference has been made in previous reports,† has been kept closely abreast of the additions to the library, but as yet no definite steps have been taken looking to its publication, although it is hoped that this may be effected in the near future.

The office staff has continued unchanged since my last report,‡ except that near the end of December Mr. Thompson resigned his position as library assistant, the position vacated being filled by the appointment of Mr. Jesse B. Norton.

The sales of the small handbook, at the gate, amount to 232 copies for 1899, and 7 copies were given away.

The exchange relations of the Garden have been increased by the addition of 28 institutions and 47 publications. There are now received at the Garden library 978 serial

* The original number and arbitrary valuation of the collection presented by Dr. Sturtevant (Rept. 8:21). On the Prelinnean shelves are now found a much larger number of volumes than is indicated here, the addition and valuation of these, however, from year to year being included in the general accession lists and the valuation of the library as a whole.

† Report. 9:16. 10:21.

‡ Report. 10:22.

publications, of which 91 are bought and 887, issued by 688 institutions, are presented.*

As in previous years, a number of visiting botanists and resident students have made serious use of the facilities of the Garden, and transcripts from the library have been made extensively and material for investigation has been loaned freely to responsible persons not able to come to St. Louis.

By permission of the Board, the Director of the Garden spent the months of June and July in a study of the botany of the Alaskan coast region and the islands of Bering Sea, as a member of the Harriman Alaska Expedition, the scientific results of which will no doubt be published in suitable form after the large amount of material collected has been subjected to critical study.

Approximately the same amount of time as in preceding years has been given to research work by the office staff. The results of some of this work appear in the eleventh Report, and other papers have been published elsewhere or will be published from the Garden later.

The instruction of Garden pupils has been carried on during the year on the lines stated in my last report.† Two pupils, Walter Nehrling and Walter Retzer, having complied with the requirements, were awarded certificates in March last. The scholarships freed by their graduation were awarded respectively on the result of competitive examination and by nomination of the St. Louis Florists' Club, to Bruno Nehrling, of Milwaukee, Wisconsin, and Rudolph J. Mohr, who had been a paying pupil for the year preceding. In August, Ernest P. Field, who held a scholarship on the nomination of the Missouri Horticultural Society, withdrew from the Garden, and the Secretary of the Horticultural Society designated as his successor Robert Meyer, of St. Louis, who had been in the employ of the Garden for some time, and to whom a scholarship was awarded in October.

* Report. 3:16. 10:25, 91.

† Report. 10:26.

Four annual events provided for in Mr. Shaw's will have taken place, as follows: The preaching of a sermon on the wisdom and goodness of God, as shown in the growth of flowers, fruits and other products of the vegetable kingdom; the tenth banquet to the Trustees of the Garden and their invited guests; the tenth banquet to the gardeners of the institution, and invited florists, nurserymen and market gardeners; and the award of premiums or prizes at a flower show held in St. Louis.

The flower sermon was preached in Christ Church Cathedral, St. Louis, on the morning of May 14, by Rt. Rev. M. N. Gilbert, of St. Paul, Minnesota.

The Trustees' banquet was given at the St. Nicholas Hotel, on the evening of May 13, and was presided over by President E. C. Eliot, of the Board of Education of St. Louis. Sixty-six gentlemen, comprising members of the Board of Trustees and literary and scientific men and friends and patrons of the natural sciences, were present. Speeches appropriate to the occasion were made by President Charles W. Dabney, of the University of Tennessee, President J. H. Finley, of Knox College, Rt. Rev. M. N. Gilbert, Bishop of Minnesota, Rev. Leon Harrison, of St. Louis, and Professor J. M. Coulter, of the University of Chicago.

The banquet to gardeners, nurserymen and florists was given at the Mercantile Club on the evening of November 18. One hundred and thirteen persons were present. The Director of the Garden presided, as directed by the will of Henry Shaw. Appropriate toasts were responded to by Professor C. M. Woodward, President of the Public School Board of St. Louis and a member of the Board of Trustees of the Garden; Mr. J. F. Ammann, of Edwardsville, Illinois, President of the St. Louis Florists' Club; and Mr. James Hartshorne, of Chicago, President of the Chicago Florists' Club. The principal effort of the evening was devoted to a consideration of the practicability of improving public

school grounds, by suitable planting, and addresses on this subject were delivered by Professor J. C. Whitten, of the University of Missouri, Mr. James Newton Baskett, of Mexico, Missouri, Professor W. J. Stevens, of Carthage, Missouri, and Honorable Norman J. Colman, formerly United States Secretary of Agriculture.*

As in previous seasons, the award of premiums for flowers and plants was intrusted to the St. Louis Florists' Club, on the occasion of their Chrysanthemum Exhibition, held in the Coliseum of the Exposition Building, Nov. 14 to 19, inclusive. In the main, awards were made for the general class of exhibits heretofore approved. In the early part of the season notices were inserted in several of the trade journals, calling attention to the Shaw medal for a plant of decided merit for cultivation not previously an article of North American commerce, and introduced to such commerce by the exhibitor during the year in which said award is made.†

As a result, this year three plants were entered in competition for the gold medal, two of which were really choice plants such as the establishment of the medal was intended to enable the residents of St. Louis to see. The medal was awarded to Henry Clinkaberry, gardener to Mr. C. S. Roebling, of Trenton, N. J., for a hybrid *Cypripedium* named James K. Polk and said to be a cross between *C. nitens magnificum* and *C. Chamberlainianum*. With the permission of Mr. Roebling, Mr. Clinkaberry has presented to the Garden the specimen on which the award was made.

THE SCHOOL OF BOTANY.

The undergraduate work of the Henry Shaw School of Botany for the past year has been conducted on the lines announced in my earlier reports.‡

* The proceedings are reported at length in the issues of Colman's *Rural World* of Nov. 30, Dec. 7, and Dec. 14, 1899.

† Report. 5:18, 19. 9:19. 10:32.

‡ Report. 10:33.



CYTRIPEDIUM JAMES K. POLK.

At the beginning of the College year 1899-1900, Mr. Herbert F. Roberts was appointed Instructor in Phanerogamic Botany, in place of Mr. W. H. Rush, who resigned his position in the spring, after four years of efficient service. Several special students and candidates for advanced degrees have been in residence and have made use of the facilities of the laboratory, and at the commencement exercises of June, 1899, the degree of Doctor of Philosophy was conferred by the University on two of these persons,— Professor Louis H. Pammel of the Iowa Agricultural College,* and Mr. Hermann von Schrenk of Washington University.†

Very respectfully,
WILLIAM TRELEASE,
Director.

* Dr. Pammel's thesis, entitled *Anatomical characters of the seeds of Leguminosae, chiefly genera of Gray's Manual*, was published as vol. 9, no. 6, of the *Transactions of The Academy of Science of St. Louis* (pp. 91-273. *pl. 7-35*).

† Dr. von Schrenk's thesis, entitled *A disease of Taxodium distichum known as peckiness, also a similar disease of Libocedrus decurrens known as pin-rot*, appears in the present volume (*infra*, pp. 23-77. *pl. 1-6*).